

ABSTRACT

A gain-phase detector differentially processes the outputs from two logarithmic amplifiers to provide ratiometric gain measurement, thereby eliminating intercept as a parameter.

- 5 Hard-limited outputs from the dual amplifiers are multiplied in a logarithmic scalable phase detector core to provide a calibrated phase measurement output. In the preferred embodiment, two logarithmic amplifiers and other circuitry are co-integrated on a single substrate to provide a high degree of matching between the amplifiers, thereby canceling errors in the individual frequency responses of the individual amplifiers, extending the usable frequency response, and
- 10 improving effective noise figure. Other numbers of logarithmic amplifiers can be used, and their various outputs can be added, subtracted, multiplied and combined in other manners to produce continuous products, continuous quotients, mixtures of products and quotients, etc., all of RF demodulated signals.

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